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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003905657 for a patent by YARRA RIDGE PTY LTD as filed on 15 October 2003.

I further certify that the above application is now proceeding in the name of CRIMSAFE SECURITY SYSTEMS PTY LTD pursuant to the provisions of Section 113 of the Patents Act 1990.

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PROVISIONAL PATENT APPLICATION

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Title:

A displaceable wing and a locking system for a displaceable wing

Inventor:

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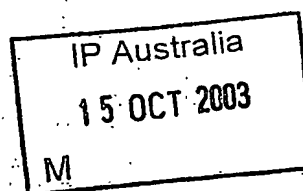
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The following statement is a full description of this invention, including the best method of performing it known to me:-



Summary of the Invention:

According to the invention, there is a locking system substantially as described herein with reference to and as illustrated in the accompanying drawings.

According to the invention, there is a wing substantially as described herein with reference to and as illustrated in the accompanying drawings.

According to the invention, there is a locking system comprising a second operable portion supported by a secondary wing and a first operable portion supported by a primary wing each portion being independently operable to effect a locking function and each co-operable with the other to effect interlocking of the locking functions.

According to the invention, there is a locking system comprising a vertically displaceable secondary engaging member supported within a hollow in a secondary wing and a vertically displaceable primary engaging member supported within a hollow in a primary wing, said secondary wing being supported within the primary wing and being displaceable to an open position to provide hand access to an interior hand operable member,

said secondary engaging member being displaceable by being key operation to engage the primary wing,

said secondary engaging member being displaceable by the interior hand operable member to engage the primary opening.

In forms of the invention the primary wing comprises a hinged door

In forms of the invention the secondary wing comprises a sliding wing.

In forms of the invention the vehicle comprises a moveable residence.

In forms of the invention the primary wing comprises a security door.

25 DESCRIPTION OF THE PREFERRED EMBODIMENT

Definitions and Conventions Employed

This specification and the provisional applications associated with this application, describe inventions comprising improved complete locks for displaceable wings and improvements for locks for displaceable that for convenience are referred to herein as locks.

So throughout this specification and claims which follow, unless the context requires otherwise, the word "locks" or variations such as "lock" will be understood to imply the inclusion of complete locks for displaceable wings and improvements for locks for displaceable wings that are transportable into other locks and locking devices without being limited to the complete locks described herein.

This specification describes locks substantially as described herein with reference to and as illustrated in the accompanying drawings.

Throughout this specification and claims which follow, unless the context requires otherwise, the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

5 Throughout this specification and claims which follow, unless the context requires otherwise, the positional prepositions such as rear, forward are used to assist in description of the preferred embodiments and with reference to the accompanying drawings and have in general no absolute significance.

10 Throughout this specification and claims which follow, unless the context requires otherwise, the word "preferably" or variations such as "prefer" does not mean nor infer that that the inventions described in the "Description of the Preferred Embodiments" are restricted to the form of an integer or collection of integers that in some context is described as preferred. Preferably means, that of a number of acceptable alternatives, one is best suited to a particular purpose.

15 Throughout this specification and claims which follow, unless the context requires otherwise, the words wing embraces both doors and windows.

Throughout this specification, the very lightly printed numerals are to be ignored, being included only to facilitate reference to previous provisional applications.

20 Throughout this specification and claims which follow, unless the context requires otherwise: **latching** means displacement of an engaging member against biasing means by an engageable means and subsequent displacement of the engaging member into engagement with the engageable means under the action of the **biasing means**, (for hinged doors [within this application] this comprises
25 displacement of a latch bolt or {latch bolt and an auxiliary bolt if there is an auxiliary bolt} towards the lock casing by the strike plate [and in conventional cases, by a curved or angled wing or lip of the strike plate] and subsequent displacement of the latch bolt into the **aperture of the strike plate**), (for sliding doors [within this application] this comprises displacement of a latch bolt with hooks or {latch bolt with
30 hooks and an auxiliary bolt} towards the lock casing (as a result of the lock being displaced rectilinearly towards the catch plate) and subsequent displacement of the latch bolt with hooks into the **aperture of the catch plate** and displacement of the hooks outwardly to overlap the aperture's peripheral edge whereby to longitudinally engage the catch plate; within this application a bolt is displaceable between a **fully**
35 **extended position** in which it is engageable within a strike plate aperture and a **retracted position** where it is removed from the aperture, (said retracted position coinciding with the bolt being substantially within the casing), (said fully extended

position embracing a bolt that is substantially fully extended); a **latch-bolt** or **latch bolt** is an outwardly biased bolt capable of executing (or participating in) latching (and includes both rectilinearly displaceable and angularly displaceable bolts) and includes bolts having a leading end that is chamfered or otherwise profiled on one side to facilitate latching [in the context of this application] and a latch bolt also includes a prism shaped bolt that is restrained in a partly extended pre-latching configuration to facilitate latching; said prism shaped bolt in some forms including **counter-acting hooks**, said prism shaped bolts in some forms having a leading end that is chamfered, curved or otherwise profiled on both sides to assist or facilitate latching; an **auxiliary bolt** means an outwardly biased plunger that is operably associated with the latch bolt; **unlatching** means withdrawal of the latch-bolt from engagement with the engageable means, (for hinged door it means withdrawal of the bolt from the aperture of the strike plate); an **unlatching lever** is a lever or knob that is hand operable to cause the latch-bolt to become unlatched; **locking** means configuring the lock to restrain it from being unlatched and in some forms of locks employing deadlocking slides, it includes restraining the deadlocking slide in an operative position to thereby restrain the bolt from being inwardly displaced by the unlatching lever; **deadlocking** means means to configure the lock to restrain the bolt from being displaced from the configuration that it assumes when engaged with the engageable means (in the case of a rectilinearly displaceable bolt for a hinged door, it means restraining the bolt in a fully extended position), the deadlocking means in some forms includes a **deadlocking slide** that is displaceable to cooperate with the bolt to restrain it against displacement; **deadlocked** means the bolt cannot be displaced from the extended position by external forces; **deadlatching** means the bolt is automatically deadlocked during latching; **remote lock** means a locking means disposed from the lock that includes a remote bolt that is operably connected to the lock (often there is an upper and a lower remote lock situated above and below the lock); **French door** means a door comprising a frame with a glass in-fill and often configured in pairs, a second door that is normally closed and is secured by vertical bolts and a first door that has the lock body and operable levers, often they have a strip of compressible sealing material located on the edge against which the first door closes to prevent energy loss, in many forms the door comprises a hollow frame where the hollow within the frame is comparatively small in depth, **security doors** means a door comprising a hollow framed door with an in-fill of mesh or woven stainless steel where the hollow within the frame is comparatively small in depth and in width; **lock body** is the lock portion fitted within the hollow frame of the wing, the lock body together with a strike plate, a pair of handle sets and a double cylinder comprising a

typical mortice lock; **depth of lock body** is the extent of the lock body in a direction parallel to the face of the door; **width of lock body** is the extent of the lock body in a direction at right-angles to the face of the door; **free-rotation-cylinder** is a cylinder comprising a key operable barrel within a cylinder housing connected to a first cam (in one form having a radially protruding arm) with free movement; **free-rotation-double-cylinder** comprises a cylinder sub-assembly comprised of opposed barrels each connected with free movement to the same first cam such that the cam is free (between limits) to be angularly displaced while the barrels remain undisplaced, this type of cylinder being commonly used in security door locks in Australia to enable the cam to be displaced by either barrel to a locking configuration and then the barrel to be reverse rotated to an undisplaced position enabling key removal while leaving the first cam in the locking position, (this type of cylinder being distinct from the more commonly used double cylinders that employ clutches and that do not have free rotation between the barrels and first cam); **clutched-cam-double-cylinder** comprises a cylinder sub-assembly comprised of opposed barrels each connectable without free movement to the same first cam such that the cam can be angularly displaced by a barrel while the other barrel remain undisplaced, the cylinder includes a clutch to select which barrel is the operative barrel, said clutch being operated by key insertion. In forms of both clutched and free rotation cylinders, the interior key operable is replaced by a hand and operable turn knob.

Description of the Drawings

Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is an isometric view from the interior showing the door, wing and hand operable portions of the locking system,

Figure 2 is an isometric view from the exterior showing the door, wing and cylinder of the locking system,

Figure 3 is an exploded isometric view of the cylinder, cam and secondary lever,

Figure 4 is a cross-section of the wing in a plane parallel the face of the wing showing a disengaged engaging member

Figure 5 is a cross-section of the wing in a plane parallel the face of the wing showing an engaged engaging member,

Figure 6 is an isometric view of the interior of the wing and door showing a disengaged engaging member,

Figure 7 is an isometric view of the interior of the wing and door showing an engaged engaging member,

Figure 8 is a partial cross-section through the door and vehicular opening in a plane parallel the ground showing the additional latching tongue.

Figure 9 is an isometric view of the operating member and primary drive recess

5 Fig 10 is an exploded view of the operating member

Fig 11 is an isometric view of the wings

Fig 12 is an isometric view of the wings

According to the invention there is a **locking system 1** for a **primary wing 2** supported adjacent a **primary opening 3** in a vehicle, said primary wing being defined in-part by an **interior side 4** and an **exterior side 5** corresponding to the interior and an exterior of the vehicle, said primary wing including a **secondary opening 6** to provide passage for hands whereby to enable a person on the exterior side to operate a locking means having a **hand operable member 48** in the interior, said primary wing including a **secondary wing 7** supported adjacent the secondary opening that is displaceable to a closed position in which it occupies the secondary opening 6,

said locking system including a **secondary engaging member 8** supported by the wing 7 and that is displaceable to an engaging position in which a **leading end 8A** of the secondary engaging member protrudes from the secondary wing to engage a **shoulder 8B** of the primary wing 2 to restrain the secondary wing relative to the primary wing,

said locking system including a **primary engaging member 9** supported by the primary wing and that is displaceable to an engaging position in which at least one **engaging portions 9B** protrudes from the primary wing to engage a **shoulder 9C** of the primary opening whereby to restrain the primary wing relative to the vehicle,

said locking system further including an exterior **cylinder assembly 10** that is key operable from the exterior of the vehicle to lock the secondary engaging member whereby to restrain the secondary engaging member in its engaging position,

30 and in forms of the invention where there is inter-locking, locking of the secondary engaging member causes the primary engaging member to become restrained against displacement.

In forms of the invention that include cross-coupling, there is a horizontally elongated **interlocking pin 80** that protrudes from the **closing edge 91** of the secondary wing 7 to engage a **shoulder 92** of the interior hand operable member to restrain it against unlocking displacement.

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In forms of the invention, the secondary engaging member is operably connected to the exterior cylinder 10 and to an interior hand operable **secondary lever 11**. In other forms of the invention, the secondary engaging member is operably connected to a key operable interior cylinder not shown, in the same way it connects to the exterior cylinder.

In forms of the invention, the cylinder has a key operable **exterior barrel 12** that is operably connected with free movement to a **first cam 13** having a radially protruding **cam arm 14** and the secondary lever is connected to the cam by a **shaft portion 16** of the first cam that is connected to the secondary lever 11. In the alternative form there is a pair cylinder wherein there are opposed key operable barrels each operably connected with free movement to the first cam.

Each barrel includes longitudinally elongated **pin recesses 100, 101** to support **drive pins 102, 103** that protrude from the barrel to engage in opposed **drive recesses 104, 105** that are defined in-part by inwardly protruding **drive shoulders 106, 107** that are engageable by the drive pins to displace the first cam and the **free space 108, 109** enables the cam to be displaced to the locked configuration shown in Fig 5 and the barrel returned to the undisplaced, key removal position shown in Fig 5 while leaving the cam in the displaced locking configuration.

In forms of the invention, the secondary wing comprises a **frame 17** that includes a **vertical hollow 18** within the frame portion comprising the closing edge and the first cam is within the hollow 18 being inserted through the enlarged **aperture 18A** to be retained there by the adjacent barrel on one side and where the shaft portion 16 protrudes into an elongated **recess 16A** in the interior secondary lever 11 - a cylindrical portion 16B of the first cam being supported on the other side within an aperture 16C within a support plate 16D that is mountable to the secondary wing by fasteners 16E. Likewise, the **cylinder casing 28** is supported against the wing by the **screws 29** that have passage through the wing and that threadedly engage in the cylinder housing.

The secondary engaging member comprises a vertically **elongated member 20** that in some forms comprises a roll form member that is supported within the hollow and that is operably connected to the first cam, said secondary engaging member having the **leading end 8A** that has passage through an **aperture 22** in the secondary wing to engage the shoulder 8B that in some forms comprises part of an **aperture 23** in the primary wing through which the member 20 has passage.

In forms of the invention, the secondary engaging member includes a **drive recess 24** disposed towards the first cam and the first cam arm is displaceable while being within the drive recess to displace the secondary engaging member to and

from the engaging position. The drive recess is defined in-part by an a substantially horizontal **upper drive shoulder 25** and a substantially horizontal **lower 26 drive shoulder 26** connected to an angled **exit shoulders 27**. The first cam arm acts on the upper shoulder to disengage the leading end 8A, it acts on the lower shoulder to cause the shoulder 8A to engage and the end of the first cam leaves the drive recess to abut the exit shoulder as shown in Fig 5 whereby to lock the secondary engaging member against displacement by means other than the cylinder or interior secondary lever – the exit shoulder being angled such that the points of contact by the cam are defined in part by vectors that pass substantially through the pivotal axis of the first cam when the lock is in the configuration of Fig 5. The drive recess in forms of the invention is within a cast portion of the secondary engaging member that is connected to the roll form portion and the leading end in forms also comprises a cast portion. In forms of the invention the secondary enanging member is upwardly biased by a spring supported within the hollow.

The primary engaging member 9 is operably connected to an interior hand operable **primary lever 30** that is operable from the interior and by a person on the exterior after passed his hand through the secondary opening. The primary wing comprises a **frame 31** that includes a **vertical hollow 32** in the frame portion comprising the **closing edge 32A** of the primary wing and an **end portion 33** of a **drive arm 34** protrudes into the hollow 32 through a side **aperture 36** in the primary wing.

The primary engaging member comprises a **vertically elongated member 36** supported within the hollow 32 and that is operably connected to the drive arm 34 and that supports engaging portions 9B that protrude sideways through vertically elongated **apertures 38** in the edge of the primary wing. The engaging portions 9B protrude to engage in **slotted apertures 39** in **catch plates 40** supported by the vehicular primary opening whereby to restrain the primary wing relative to the primary opening.

In forms of the invention, the primary engaging member includes a **primary drive recess 41** disposed towards the first cam and the drive arm 34 is displaceable while being within the drive recess to displace the primary engaging member to and from the engaging position. The drive recess is defined in-part by an a substantially horizontal **upper drive shoulder 42** and a substantially horizontal **lower drive shoulder 43** connected to an **exit shoulder 44**. The first cam arm acts on the upper shoulder to disengage the engaging portions 9B, it acts on the lower shoulder to cause the engaging portions 9B to engage and the end of the drive arm 34 leaves the primary drive recess to abut the exit shoulder 44 to lock the primary engaging

member against displacement by means other than the operating member 46 — the exit shoulder being angled such that the points of contact by the drive arm are defined in part by vectors that pass substantially through the pivotal axis of the drive arm when the primary engaging member is in the locked configuration. In forms of the invention the secondary engaging member is upwardly biased by a spring supported within the hollow.

The primary drive recess in forms of the invention is within a cast portion of the primary engaging member that otherwise substantially comprises a roll form member.

The drive arm 34 in some forms comprises part of a **operating member 46** defined in-part by a horizontal pivotal axis 46A that is orthogonal to the face of the primary wing and that is adjacent to the secondary wing opening. The operating member includes the arm 34 and an **angled return 48** comprising the primary lever. The operating member includes a cylindrical aperture that is supported by a shaft comprising a cylindrical **stud 48** that is threadedly attached to a **support plate 49** attached to the edge of the primary wing by fasteners.

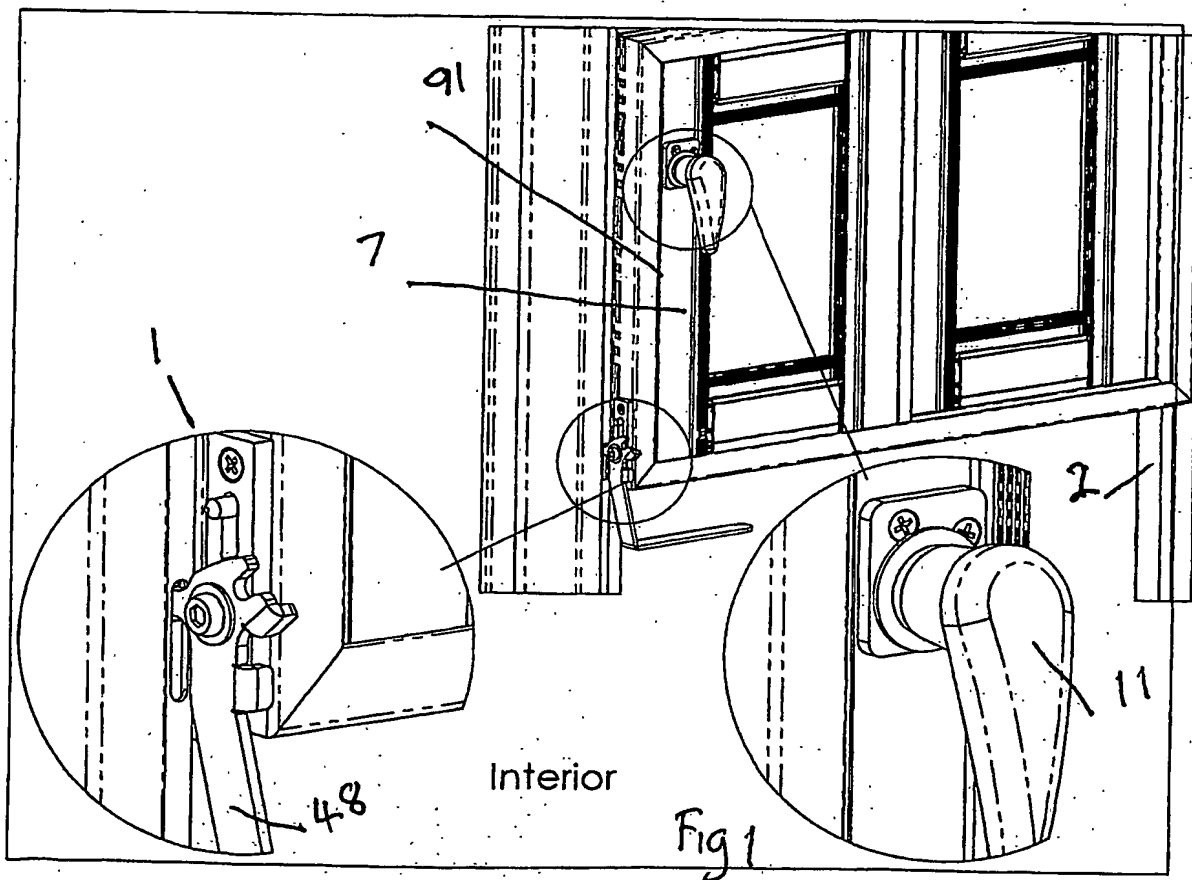
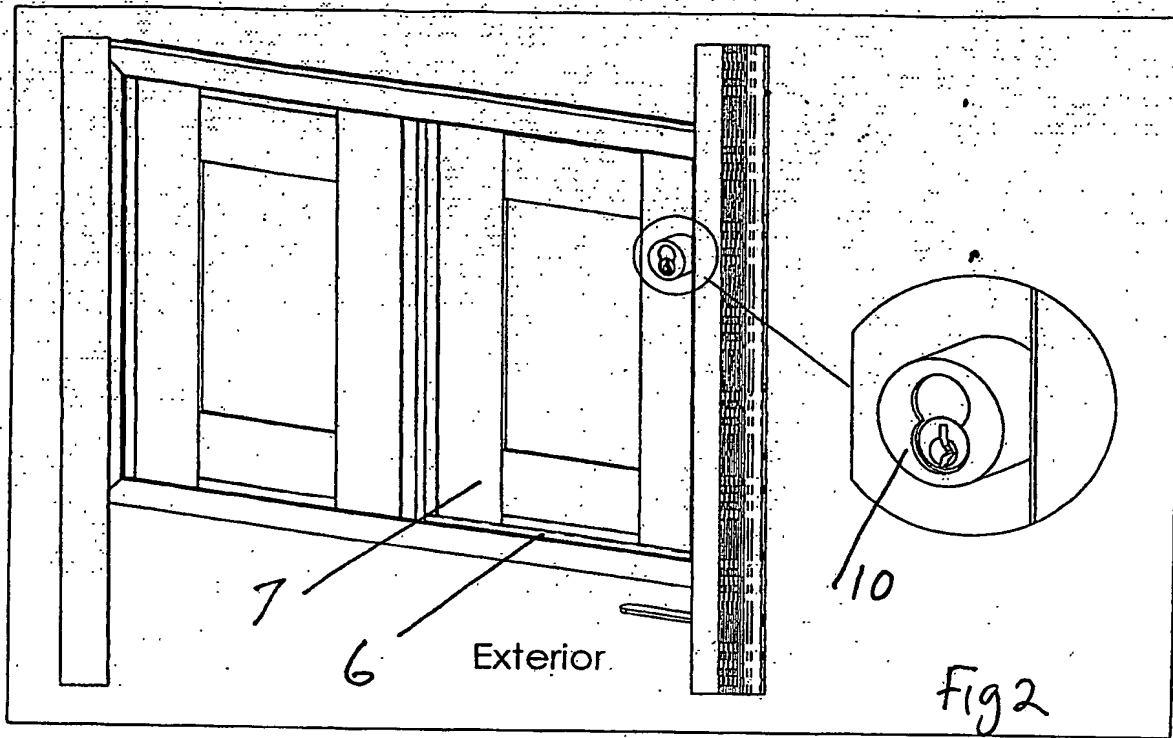
In forms of the invention, the secondary supports the horizontally elongated **interlocking pin 80** that protrudes from the **closing edge 91** of the secondary wing 7. The operating member includes an **interlocking portion 93** including the shoulder 92 and the support plate 49 includes a vertically elongated aperture 94 to permit passage of the pin 80 and to accommodate displacement of the pin between disengaged and engaged configurations. In usage, the primary engaging member is displaced to the engaging position by operation of the lever 48, the secondary wing is closed during which displacement, the pin passes through the aperture 94 and then the secondary engaging member is operated by key to be driven downwardly during which displacement, the pin 80 enters the slot 95 to engage the shoulder 92.

In forms of the invention, the protruding engaging portions comprise **headed studs 50** and the catch plates comprise **u shaped members 51** having slotted **apertures 52** that extend to the top of the member to be open ended to receive the **shanks 53** of the studs whereby to enable the **heads 54** to be located behind the **side walls 55** of the slots.

In forms the wing is biased towards the closed position by a **spring 56** and additionally includes a **latching tongue 57** that protrudes through an **aperture 58** in the side of the door to engage a **strike plate 59** mounted to the vehicular opening, said tongue preferably having an **angled leading end 60** to facilitate latching wherein the latch tongue and wing are displaced by the strike plate as the door is closed.

Yarra Ridge Pty Ltd

October 15, 02



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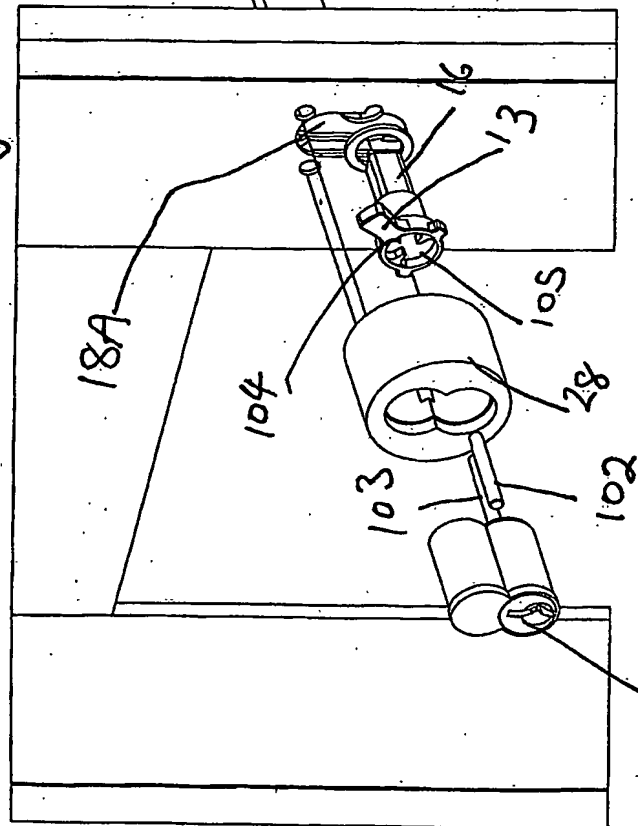
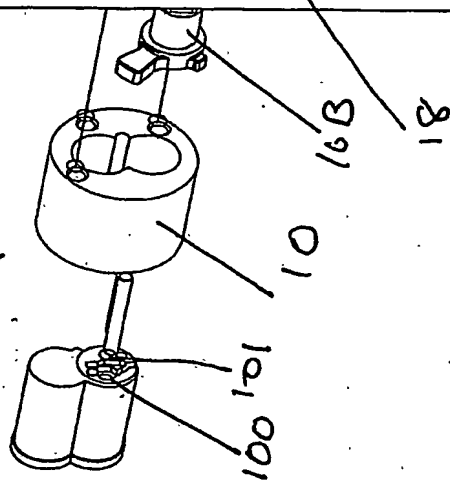
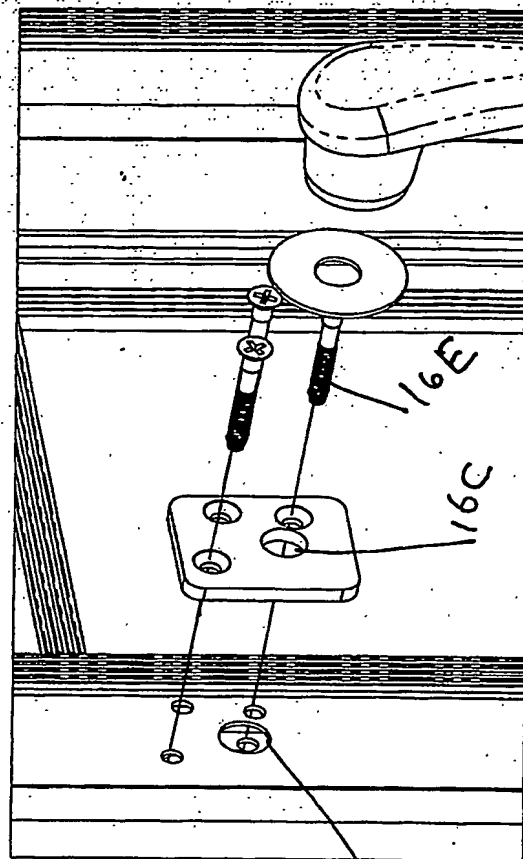
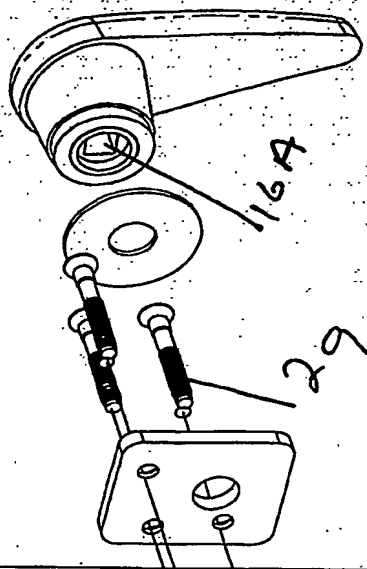


Fig 3



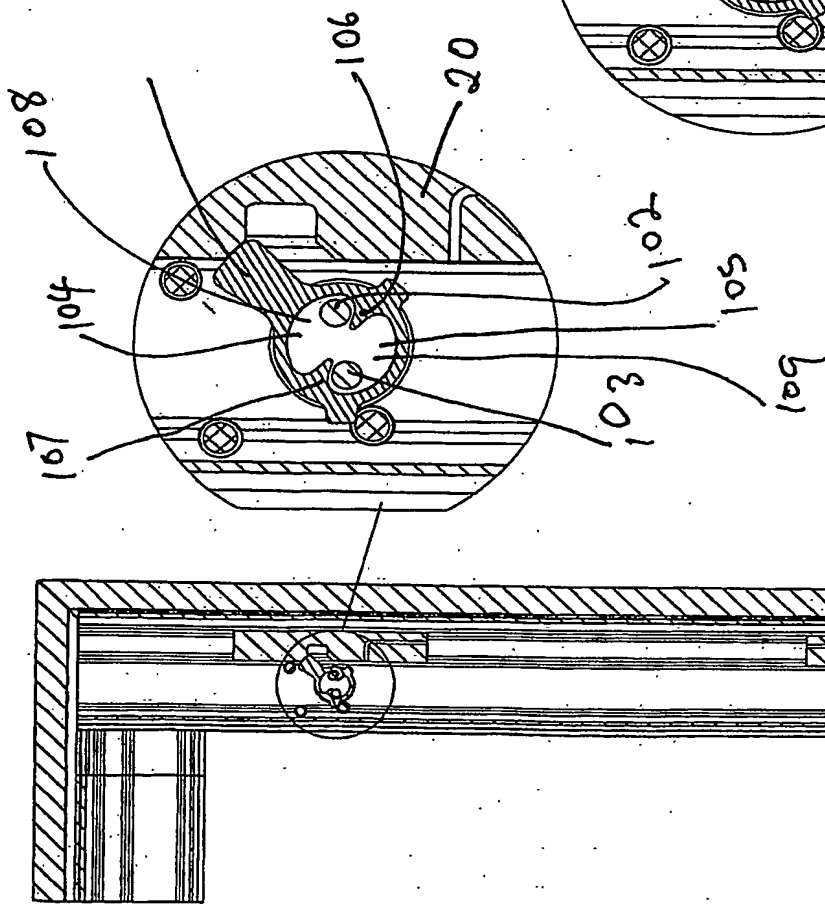
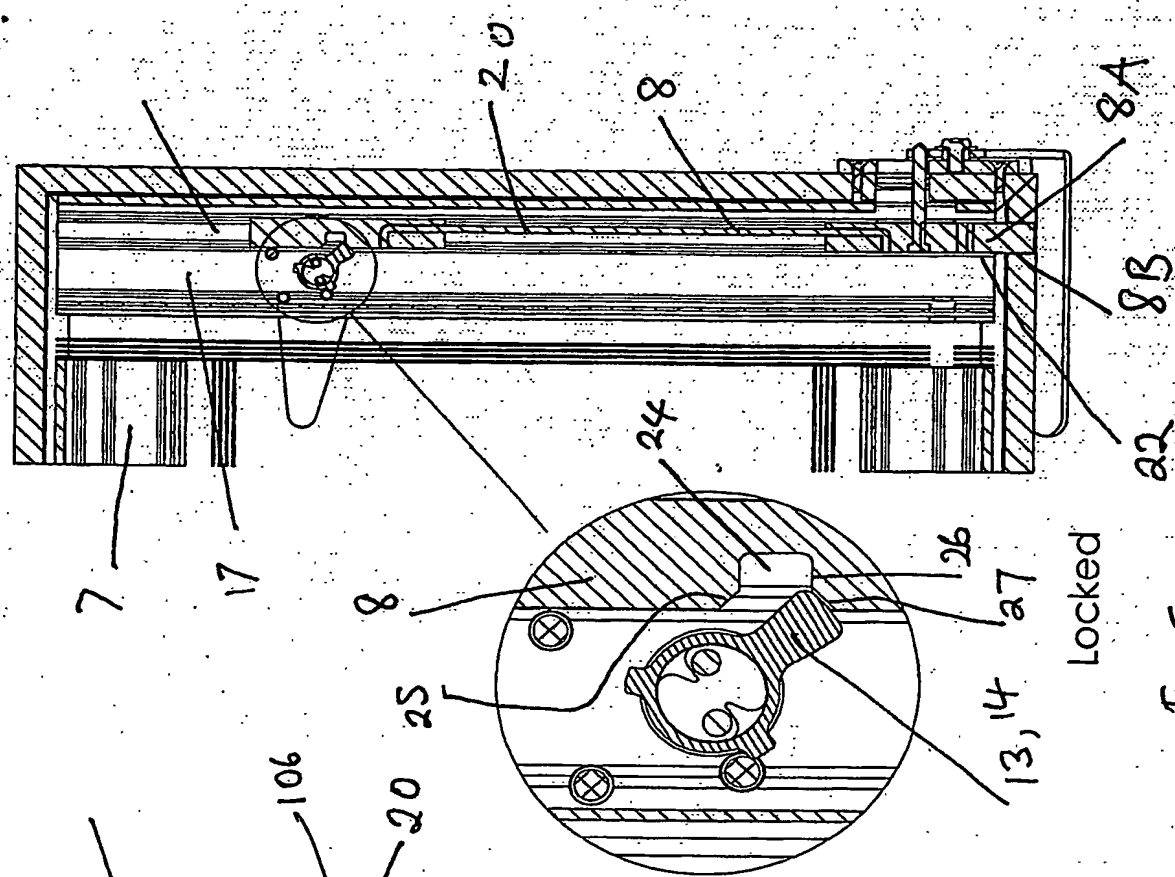


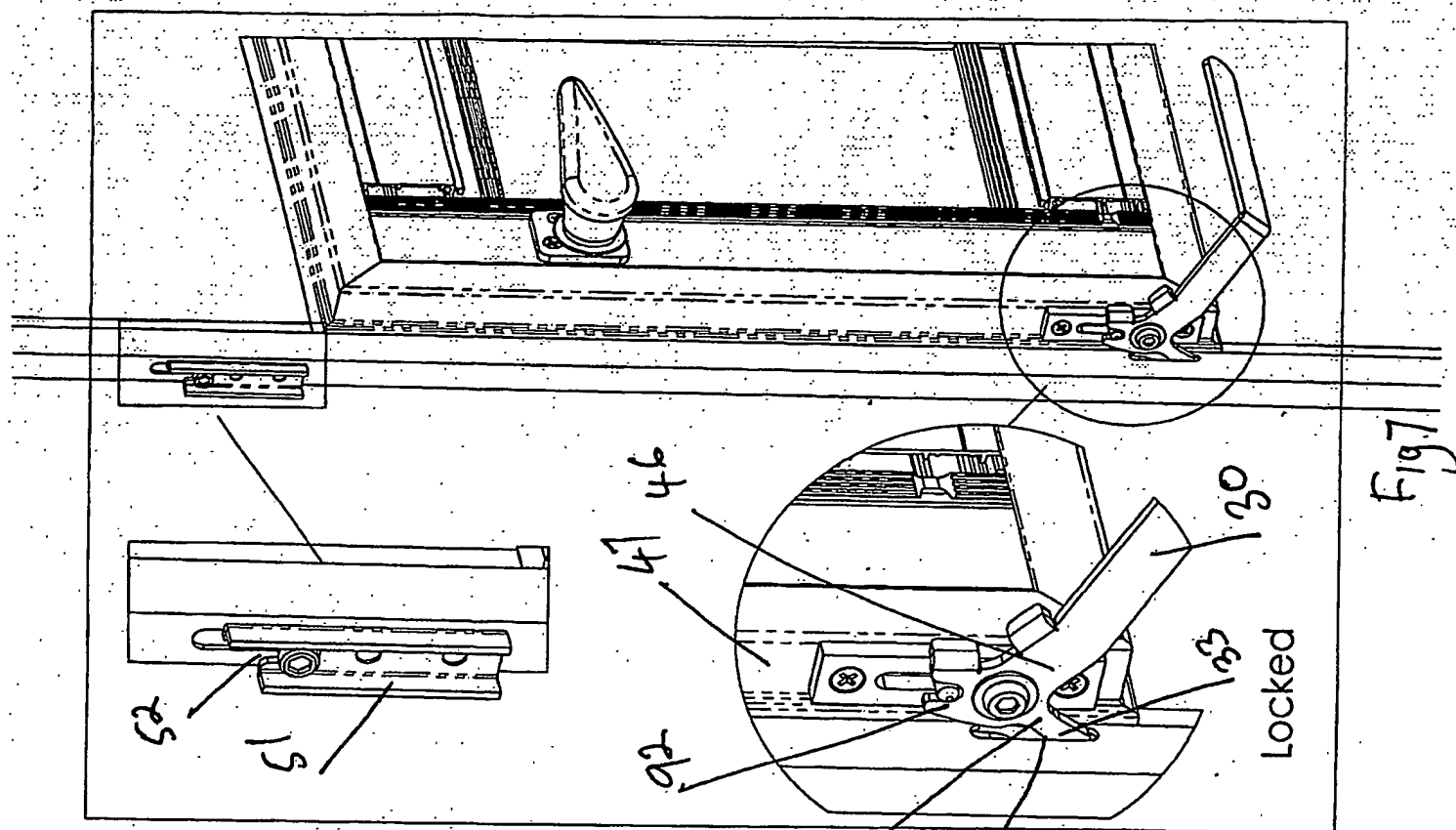
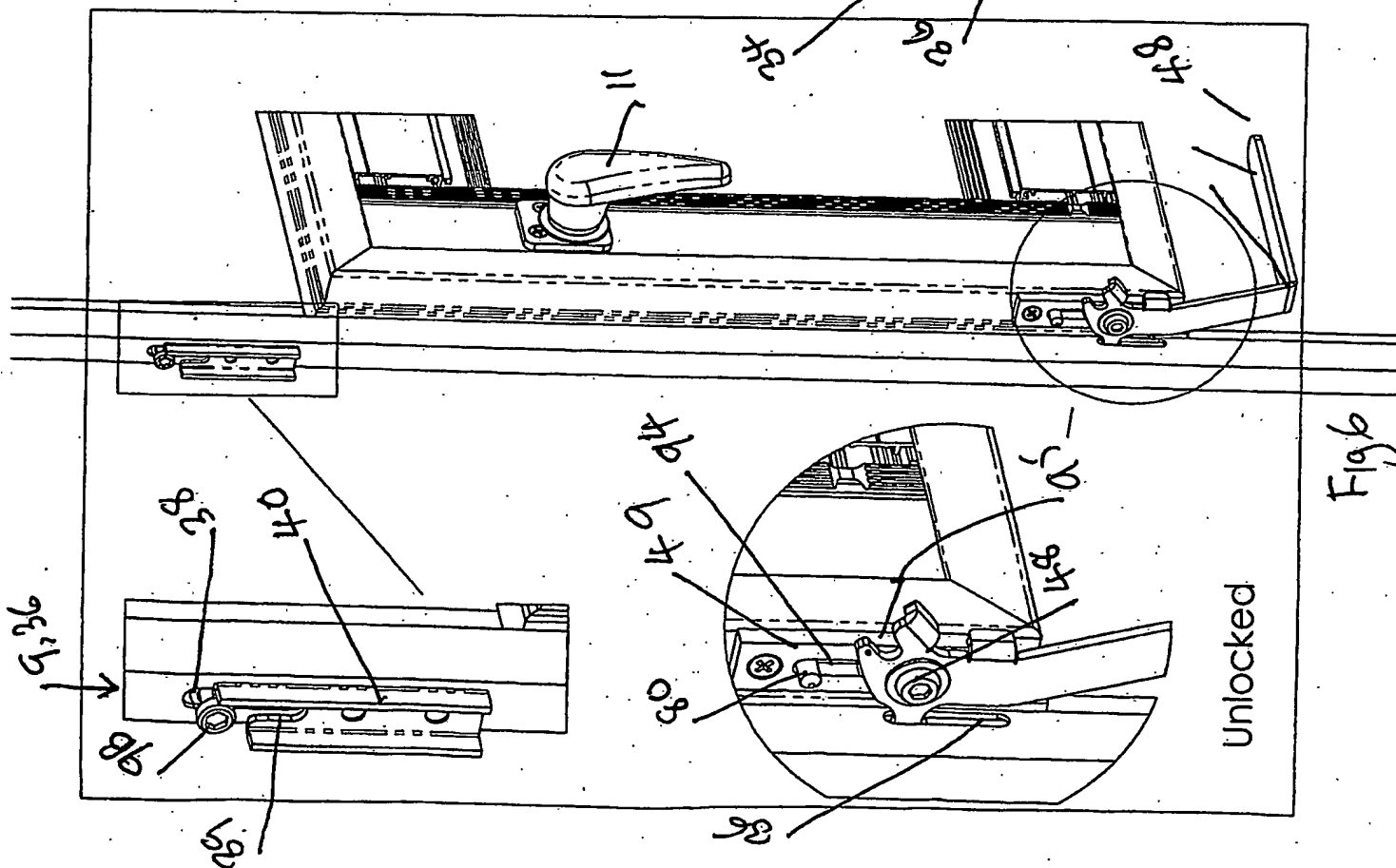
Fig 4

Unlocked



Locked

Fig 5



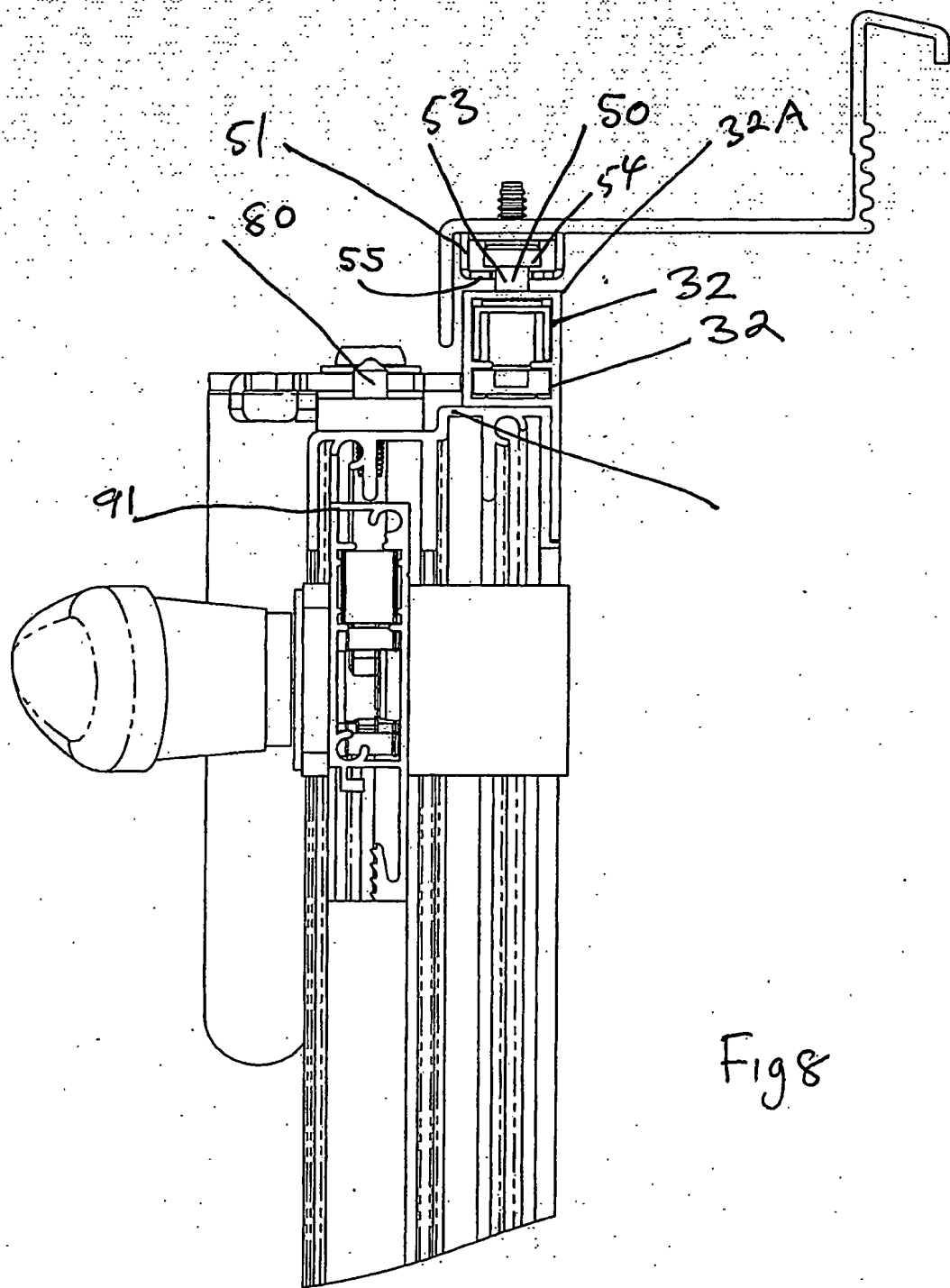
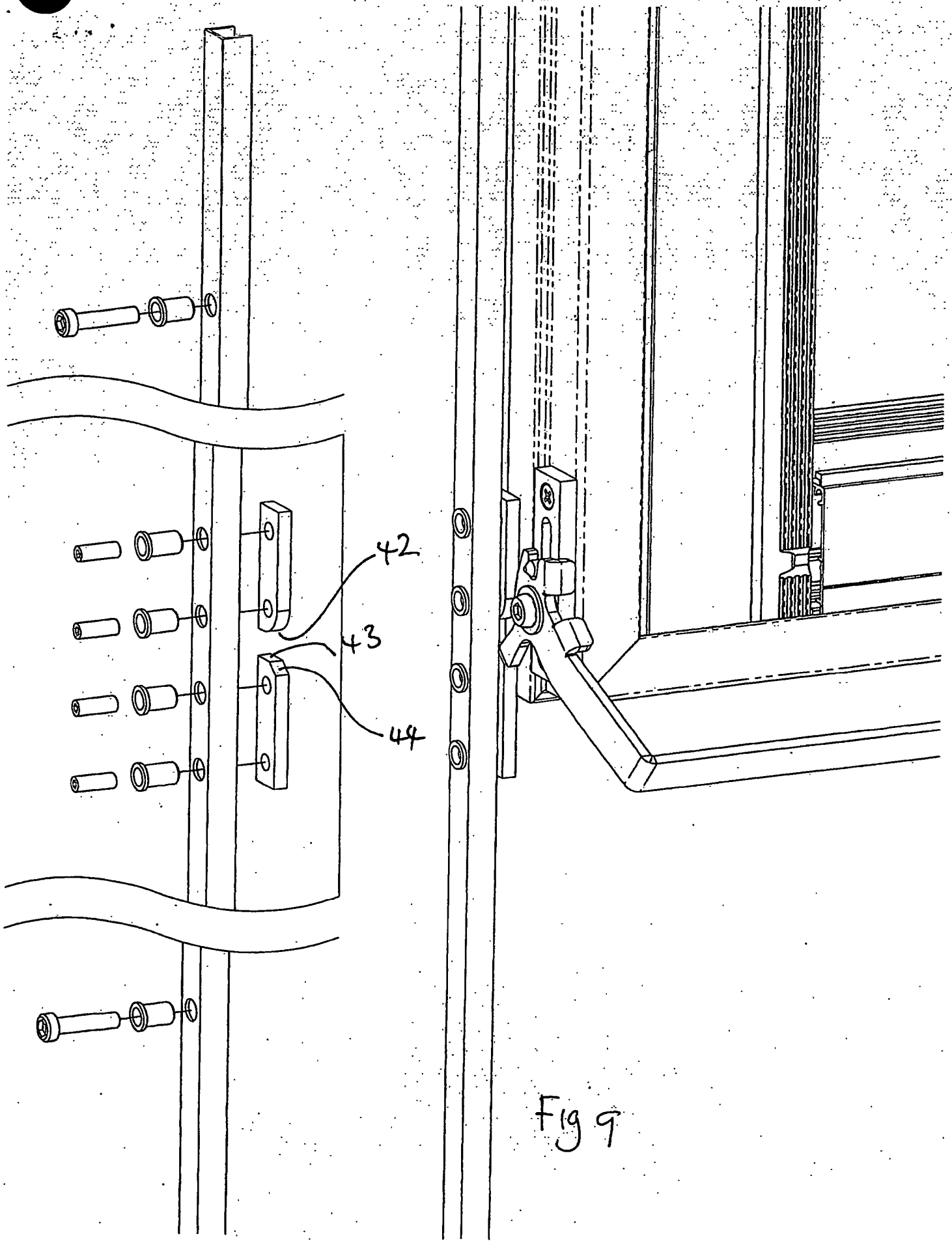


Fig 8



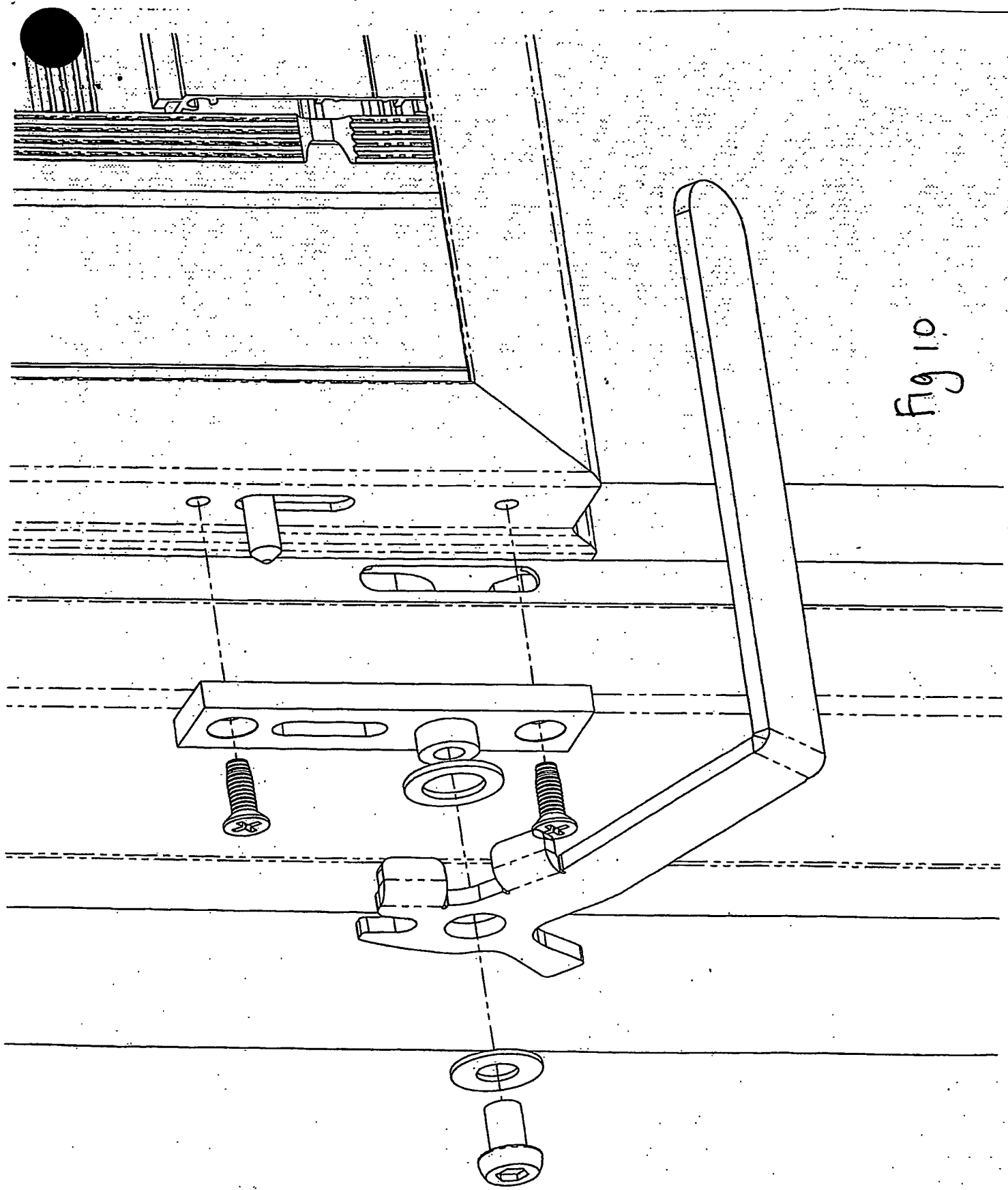
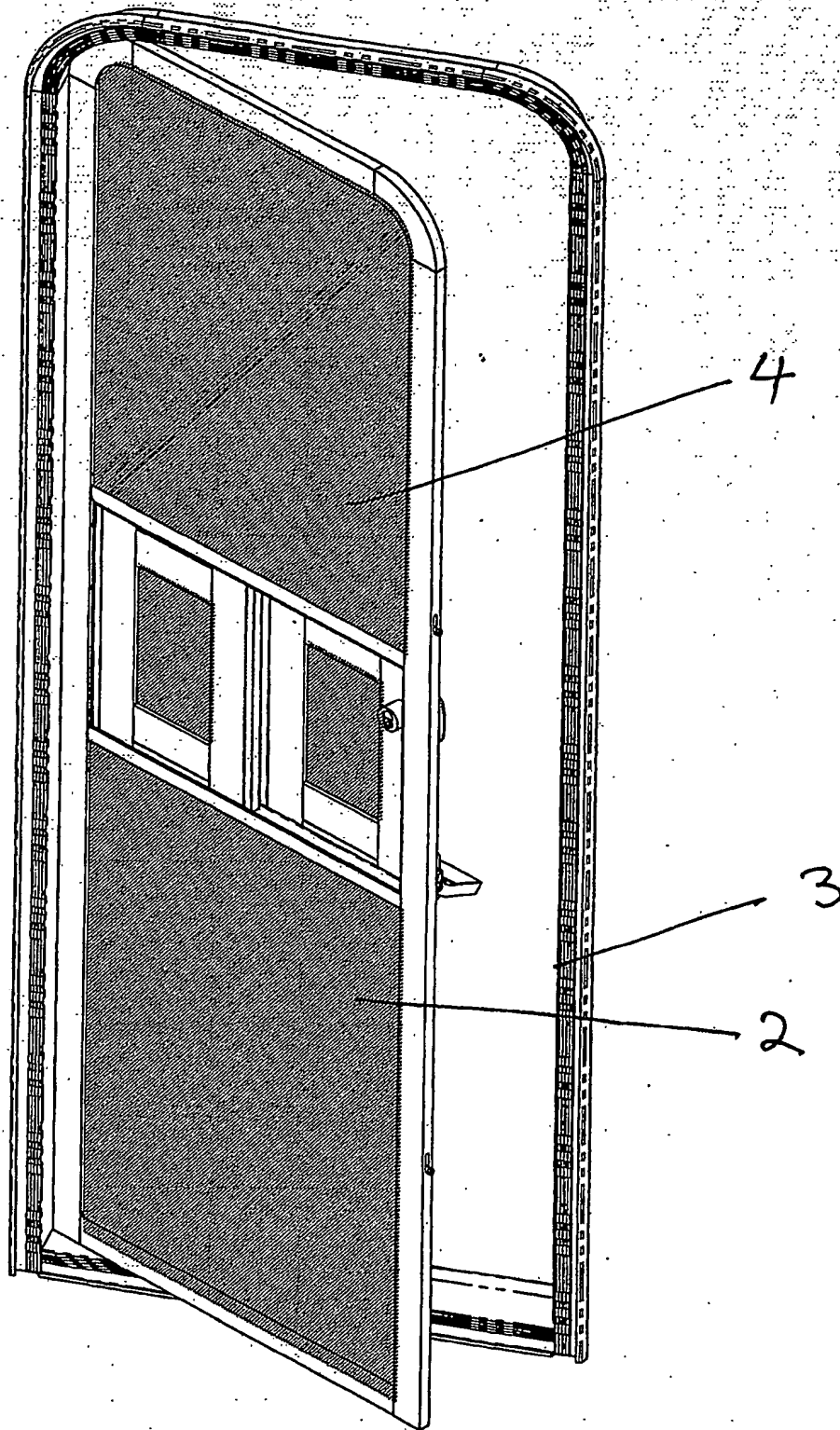
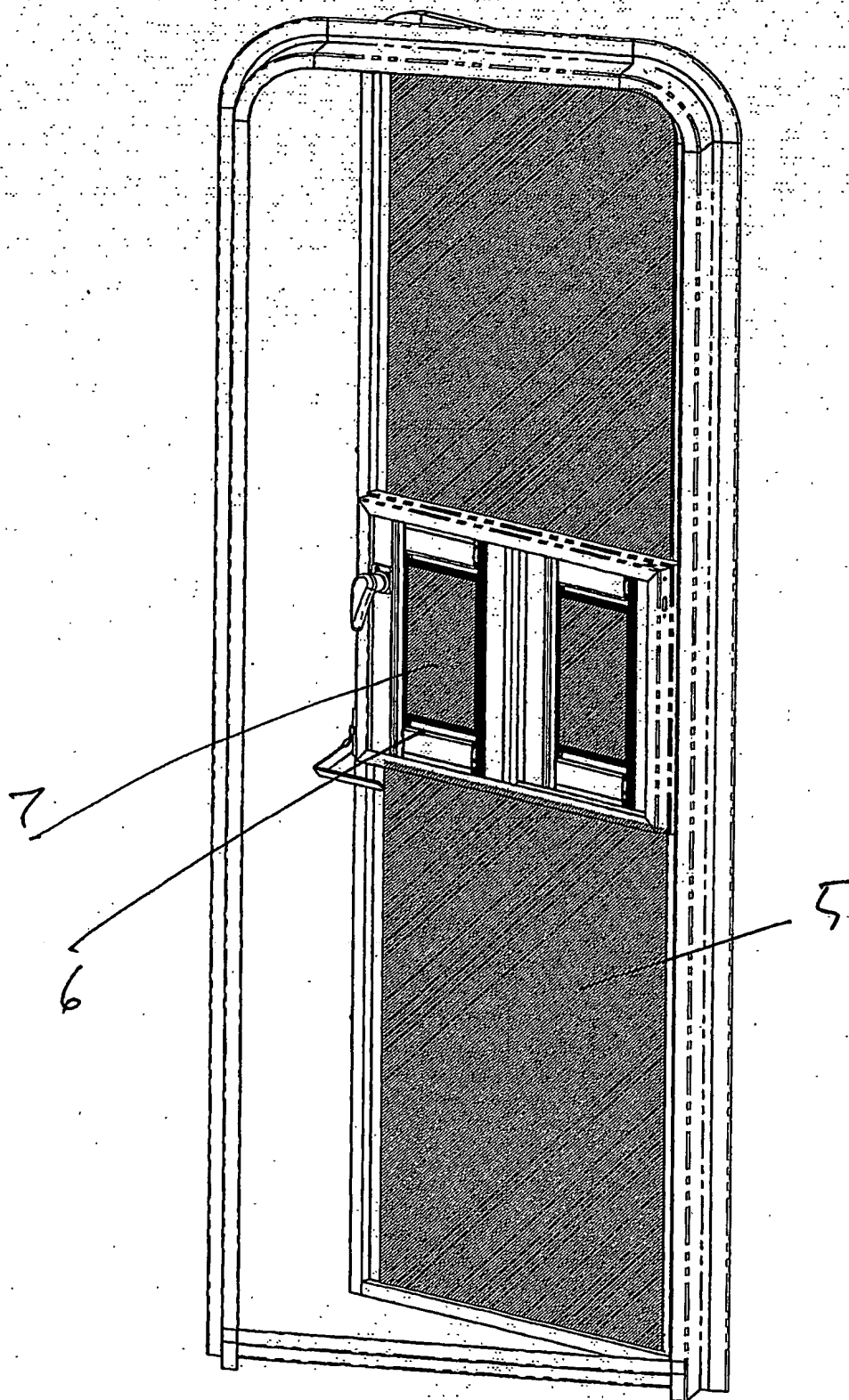


Fig. 10



Exterior

Fig 11



Interior
Fig 12

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